

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-19 (canceled).

20. (Currently Amended) An automated method of evaluating proximity of a second contour correspondent to a template contour provided by a database containing templates of determined objects to be recognized, to a first contour extracted from an image, comprising:

~~determining points of the second contour that are each univocally paired with one point of the first contour according to a pointwise pairing step comprising:~~

~~a step of associating selecting each point of the first contour and matching each said selected point of the first contour with a point of the second contour which is determined as the closest to the selected point, resulting for wherein each point of the second contour, in a set of points of matches with 0, 1 or n points of the first contour, that is associated with, and then~~

~~a step of univocally pairing each point of the second contour with only one of said matched point of the selected points of the first contour if said matched points one point of the first contour are no less than 1 exists, wherein the paired point of the first contour is the closest to said point of the second contour, and~~

~~evaluating [[the]] proximity of each of the points of said second contour to each of the paired points of said first contour as a function of a proximity measure of each of the said determined points of the second contour, with the one point of said first contour to which it is univocally paired, so that the points of said second contour that could not be paired according to said pointwise pairing step have a zero contribution in said evaluation.~~

21. (Previously Presented) The method as claimed in claim 20, wherein the determination of a point that is closest to a given point is based on a true or discrete measure of the Euclidean distance between the two points.

22. (Previously Presented) The method as claimed in claim 21, comprising a step of allocating a measure of proximity $Dist(M_i)$ of each point M_i of the second contour to the first contour, based on the measurement of the distance from this point to the point of the first contour with which it is paired.

23. (Previously Presented) The method as claimed in claim 22, wherein said distance measure is a measure corrected as a function of the difference of class of orientation of the points of the pair considered.

24. (Previously Presented) The method as claimed in claim 20, wherein in the step of associating of each point of the first contour, the point that is closest from among the points of the second contour which have the same class of orientation as said point of the first contour is associated.

25. (Currently Amended) An automated method of evaluating proximity of a second contour correspondent to a template contour provided by a database containing templates of determined objects to be recognized, to a first contour extracted from an image, comprising:

determining points of the second contour that are each univocally paired with one point of the first contour according to a pointwise pairing step comprising:

a step of associating each point of the first contour with a point of the second contour determined as the closest, resulting for each point of the second contour, in a set of points of 0, 1 or n points of the first contour, that is associated with, then

a step of univocally pairing each point of the second contour with one point of the first contour if said one point of the first contour exists, by determining from among said set of points of the first contour, the point of the first contour which is the closest to said point of the second contour, and

evaluating the proximity of said second contour to said first contour as a function of a proximity measure of each of said determined points of the second contour, with the one point of said first contour to which it is univocally paired, The method as claimed in claim 20,

wherein the associating step uses a chamfer map of the second contour via which, at each point of the first contour with coordinates x and y applied as input, said map provides as output an identification of the point of the associated second contour and a measure of the proximity between the two points thus associated.

26. (Previously Presented) The method as claimed in claim 25, wherein with the second contour is associated a chamfer map per class of orientation, and for each point of the first contour, the associating step comprises a step of determining the class of the point of the first contour, so as to apply the coordinates (x,y) of this point as inputs to the chamfer map corresponding to said orientation class.

27. (Previously Presented) The method as claimed in claim 25, comprising eight orientation classes wherein the associating step uses a chamfer map of the second contour via which, at each point of the first contour with coordinates x and y applied as input, said map provides as output an identification of the point of the associated second contour and a measure of the proximity between the two points thus associated; and

the second contour is associated a chamfer map per class of orientation, and for each point of the first contour, the associating step comprises a step of determining the class of the point of the first contour, so as to apply the coordinates (x,y) of this point as inputs to the chamfer map corresponding to said orientation class.

28. (Canceled)

29. (Previously Presented) The method of identification of claim 39, wherein the allocation of a local score of proximity $N(M_i)$ to each point M_i of the second contour as a function of a measure of proximity $Dist(M_i)$ of this point M_i to the first contour, is made according to the following criteria:

- $N(M_i)$ has a value lying between 0 and 1.

- $N(M_i) = 0$, when said point is paired with zero points of the first contour;
- $N(M_i) = 1$, when the proximity measure is equal to zero;
- $N(M_i)$ has a value of about 1 when the proximity measure lies between 0 and 1 pixels.
- $N(M_i)$ decreases very rapidly to 0 as soon as the proximity measure becomes greater than 1 pixel.
- $N(M_i)$ decreases according to a curve having a point of inflection, in the neighborhood of a proximity measure of about 2 pixels.
- $N(M_i)$ has a quasi-zero value as soon as the proximity measure becomes greater than 3 pixels.

30. (Previously Presented) The method of identification as claimed in claim 39, wherein the function for allocating the score of proximity to the point M_i may be written:

$$N(M_i) = \left(0.5 - \arctan \frac{4(\text{Dist}(M_i) - 2)}{\pi} \right) \frac{1}{0.9604}.$$

31. (Previously Presented) The method of identification as claimed in claim 39, comprising a step of measuring a global score η equal to the mean of the proximity scores relative to the number of points of the template contours.

32. (Previously Presented) The method of identification as claimed in claim 39, applied successively to each of the template contours of a collection of template contours.

33. (Previously Presented) The method of identification as claimed in claim 32, wherein said collection is obtained from another method of identification of targets, such a method using a Hausdorff distance measure.

34. (Previously Presented) The method of identification as claimed in claim 39, comprising a step of selecting hypotheses by comparison with a threshold of each of the global scores η allocated to each of the template contours of a collection of template contours of a collection.

35. (Previously Presented) The method of identification as claimed in claim 34, wherein said threshold is fixed at 0.6.

36. (Previously Presented) The method of identification as claimed in claim 34, comprising a step of discriminating between hypotheses of template contours which are superimposed, comprising for each pair of a first contour hypothesis and of a second contour hypothesis which are superimposed, a step of weighting the global score allocated to each of the template contours, said weighting step comprising the application of the method of measurement of proximity wherein:

by applying as second contour, the contour of said first hypothesis and as first contour, the contour of said second hypothesis, said proximity measure obtained for each point of contour of the first hypothesis being applied as weighting factor for the local score of proximity of this point to the image contour, and by deducing the global score associated with the first contour hypothesis representing its proximity to the image contour by calculating the mean of said weighted local scores,

by applying as second contour, the contour of said second hypothesis and as first contour, the contour of said first hypothesis, said proximity measure obtained for each point of contour of the first hypothesis being applied as weighting factor for the local score of proximity of this point to the image contour and by deducing the global score associated with the first contour hypothesis representing its proximity to the image contour by calculating the mean of said weighted local scores; and

a step of allocating a measure of proximity $Dist(M_i)$ of each point M_i of the second contour to the first contour, based on the measurement of the distance from this point to the point of the first contour with which it is paired.

37. (Previously Presented) The method of identification as claimed in claim 36, wherein an hypothesis is adopted as best hypothesis of template contour, from among a plurality of hypotheses which are superimposed, that with which the best global score is associated.

38. (Canceled)

39. (Currently Amended) An automated method of identification of targets in an image, comprising

applying an automated method of evaluating measurement of proximity of a second contour to a first contour, ~~as claimed in claim 20, wherein the method of evaluating comprising:~~

determining points of the second contour that are each univocally paired with one point of the first contour according to a pointwise pairing step comprising:

a step of associating each point of the first contour with a point of the second contour determined as the closest, resulting for each point of the second contour, in a set of points of 0, 1 or n points of the first contour, that is associated with, then

a step of univocally pairing each point of the second contour with one point of the first contour if said one point of the first contour exists, by determining from among said set of points of the first contour, the point of the first contour which is the closest to said point of the second contour, and

evaluating the proximity of said second contour to said first contour as a function of a proximity measure of each of said determined points of the second contour, with the one point of said first contour to which it is univocally paired,

the identification method further comprising an allocation of a local score of proximity $N(M_i)$ to each point M_i of the second contour as a function of a measure of proximity of this point M_i to the first contour, which has a value lying between 0 and 1, which is equal to zero if it is paired to zero points of the first contour, and if it is paired to one point of the image contour, which is equal to a value that is a smallest the smaller the larger the distance between the two paired points.